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STRAITOMAT

Overview

With rejects and refinishing pushing up the cost, fabric distortion –however small- is wholly unacceptable today to garment manufacturer. SEMITRONIK provides budget- priced, yet cost effective straightener to meet the needs of those whose requirements in terms of versatility and user-friendliness are less paramount.

STRAITOMAT, its highly sensitive scanners pick up the signal generated by each passing thread. Its instantaneous signal processing enables the system to determine instantly the angle distortion, even at high running fabric speed irrespective of different colors, printed designs and surface structures usually associated with textiles. It automatically corrects fractional and angular deviations of the weft line from the specified norms.

Technical Data

- **Signal generation:** photo electronic measurement by oscillating lens, 4-6 scanners
- **Signal processing:** microprocessor-controlled

Components & Power Specifications

- **Transformer** : 440V/230V, 400 VA
- **S.M.P.S** : NES-12V-30A
NES-5V-3A
SBJC-Z100 24V/2.1A
- **Light Source** : Halogen Lamps (4nos) in Transmission type source
Infrared assembly in Reflection type source(optional)
- **Drives** : DELTA Drive 0.75KW/440V/3-3 phase(2nos)
- **M.C.B** : 10A/415V(2nos)
- **Contactors** : 230V/16A(1 no)
- **Relays** : OEN 1R-3-240 10K,240VAC(4nos+3(In case of Infrared))
- **Choke** : 3Phase Line 2hp(2nos)

Practical Aspects

Detection Ability:

The scanners detect only picks and courses, without considering printed patterns. The working principal only runs true with the fabric when the weft is reasonably linear between the individual binding points. With knitted fabric, it is essential that the course structures convey the same image to the scanners as would a series of picks.

Intelligent signal processing:

The system provides photoelectric detection by 4-6 scanners with the close loop feedback of light source. In case of fabric whose basic structure allow to pass light ,transmission type light source is used, whereas to process the thick fabric like Denim ,reflection type light source is used.

Straightening Capacity:

For any weft straighter, ability to straighten fabrics of given width is governed by the dimension of its skew and bow roller. To ensure maximum efficiency, the roller should be covered by fabric to the full extend of their effective width. Certain working width is required to handle very much narrow fabric. The fabric where only half the width of that of the straighter, the ability of the skew rollers to correct would be reduced by 50% and that of the bow roller by as much as 75%.

Straightening Time:

The system can correct fabric with full distortions at the speed of 100 Mt/min and bring down the distortion in 1% tolerance.

User Friendly Key Interface

Manual control box is provided for setting important parameters like gain, preset etc. Different fabric quality wise gain selection facility is given in this system to cover mostly whole range of fabric. Also skew/bow preset setting is provided to eliminate the stenter error if any.

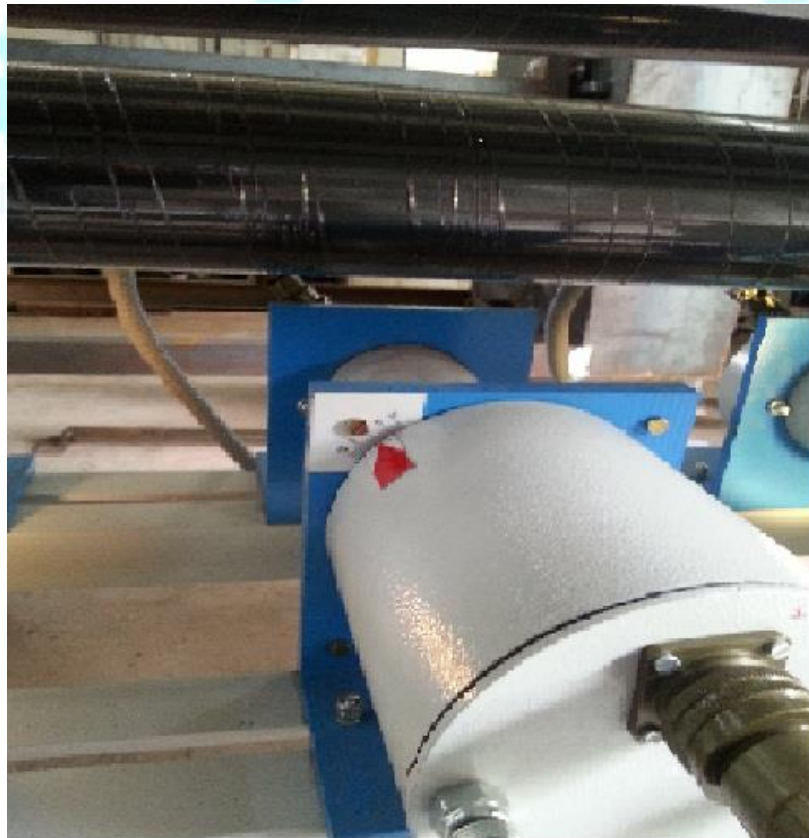
Informative distortion indication

The fabric distortion in terms of skew and bow is updated on touchpad LCD display. The other parameters like running status of all scanners, skew/bow gain values and skew/bow preset values are shown to user.

System Blocks



Scanners

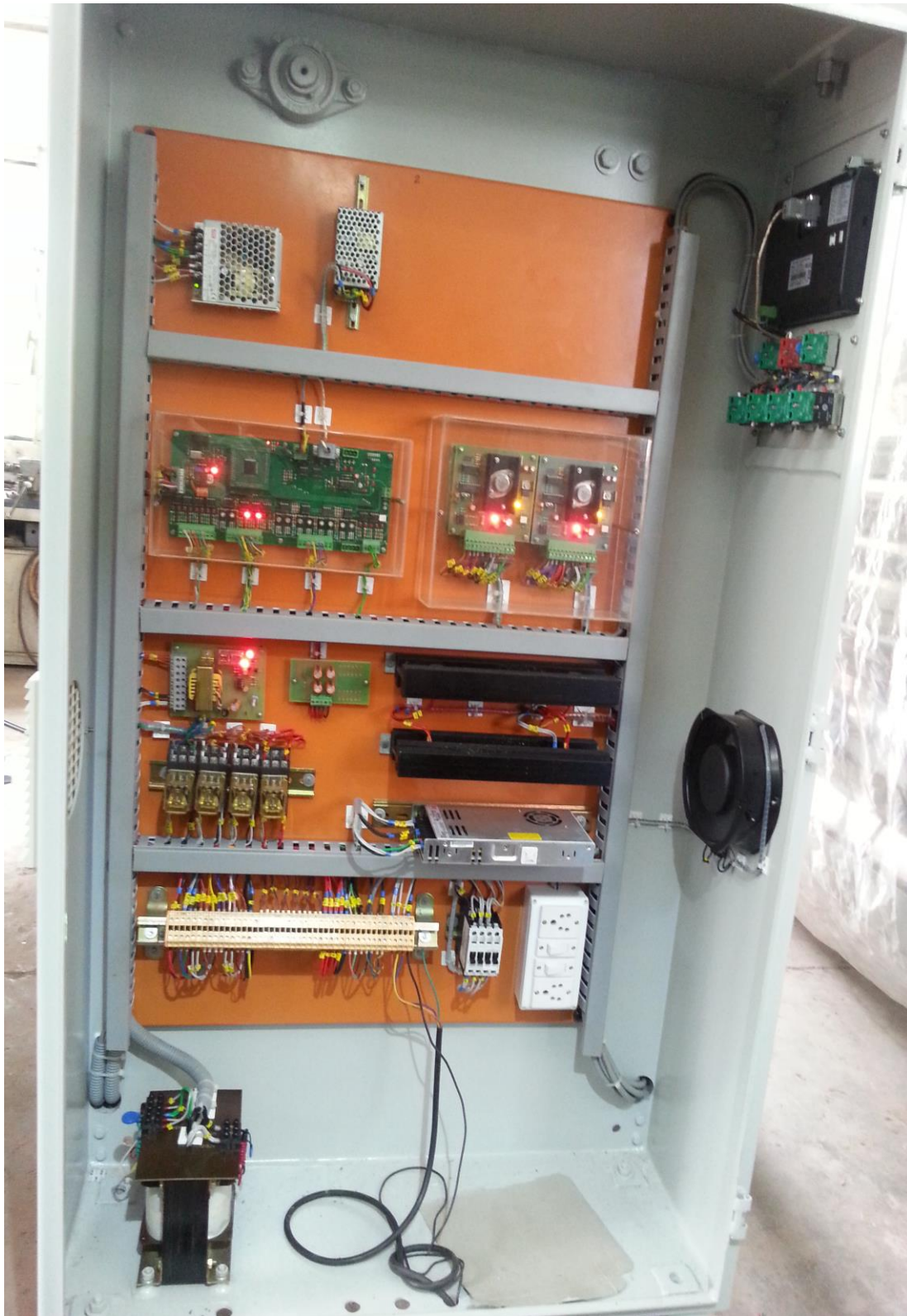


Zero Setting

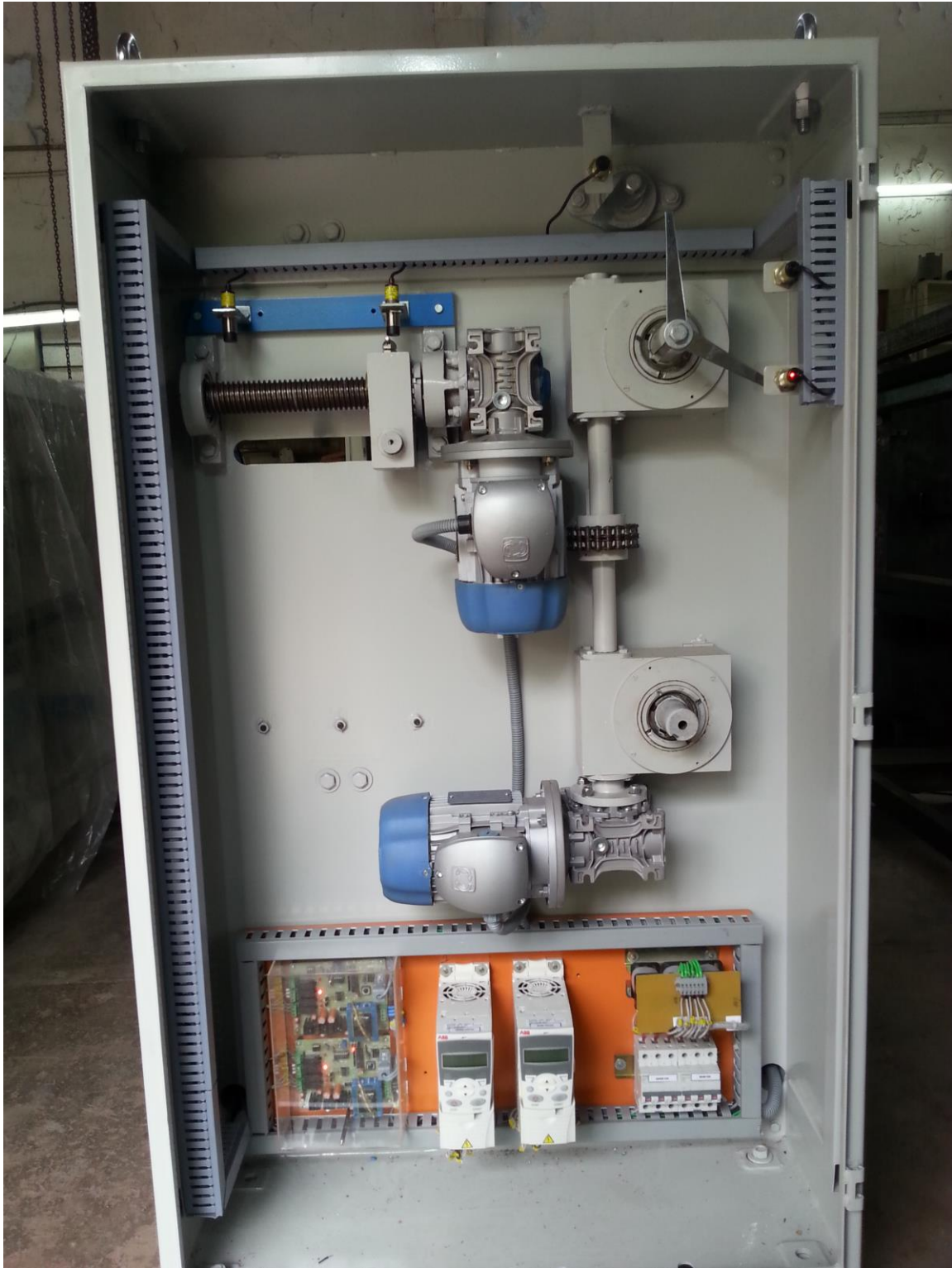
Straitomat



User Interface



Electronic Panel



Control Panel

Straitomat



Skew Rolls



Bow Rolls

Installation

Lifting and carrying of panel:

The door handles on the panel should not be used to lift or carry the panel it should be lifted from its packing case with the hooks provided and do not remove the plastic cover from panel until panel is opened.

Location and Position:

Choose a site where panel is to be mounted
Note subjected to any vibration

Surrounding temperature should not exceed 50 C. If it exceeds 60 C, there every possibility of permanent damage to components above conditions is must to ensure trouble free performance of the system.

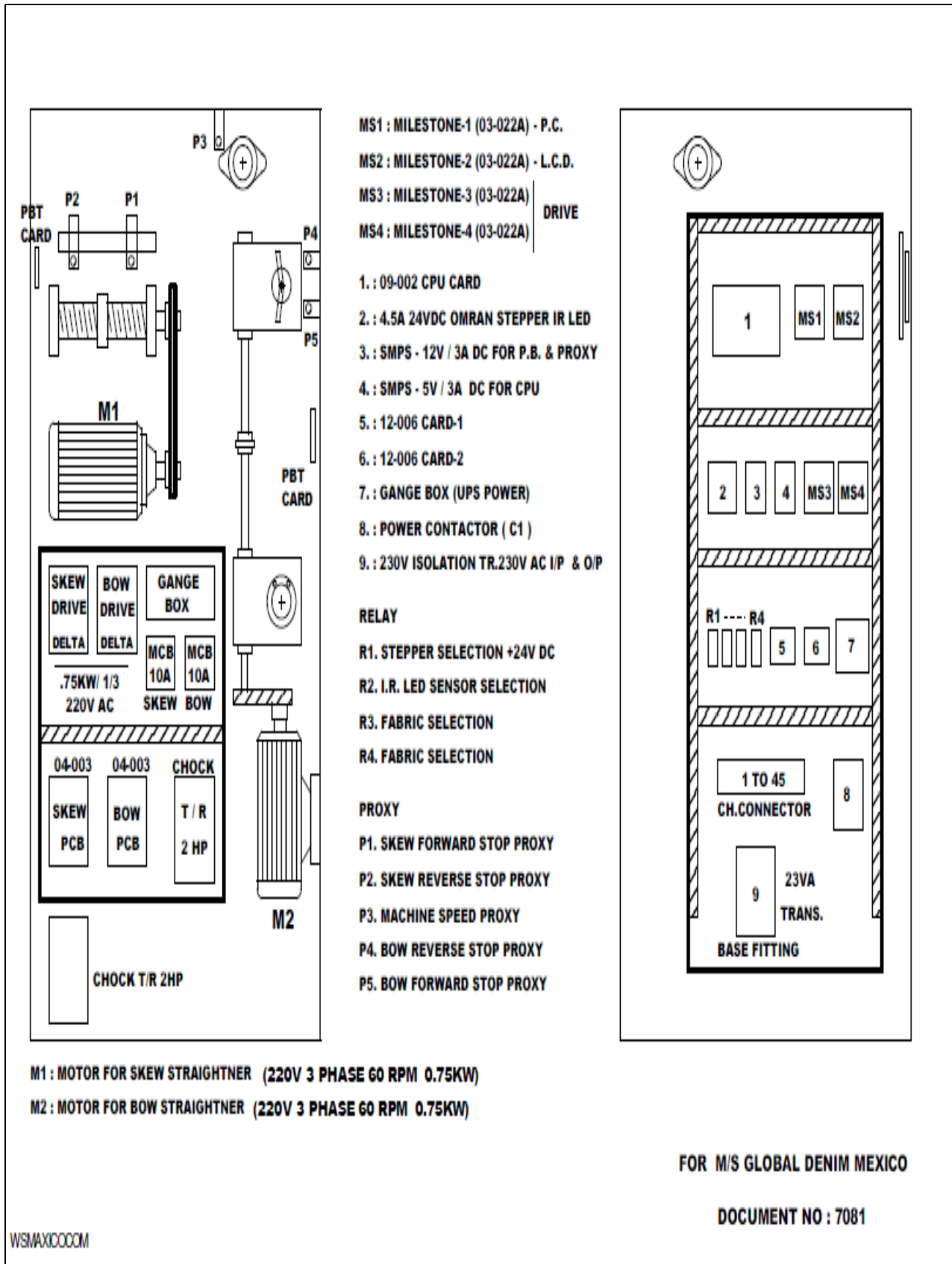
Control and Display panel should be located within easy reach and distance of the machine operator and should not be subject to vibration and heat.

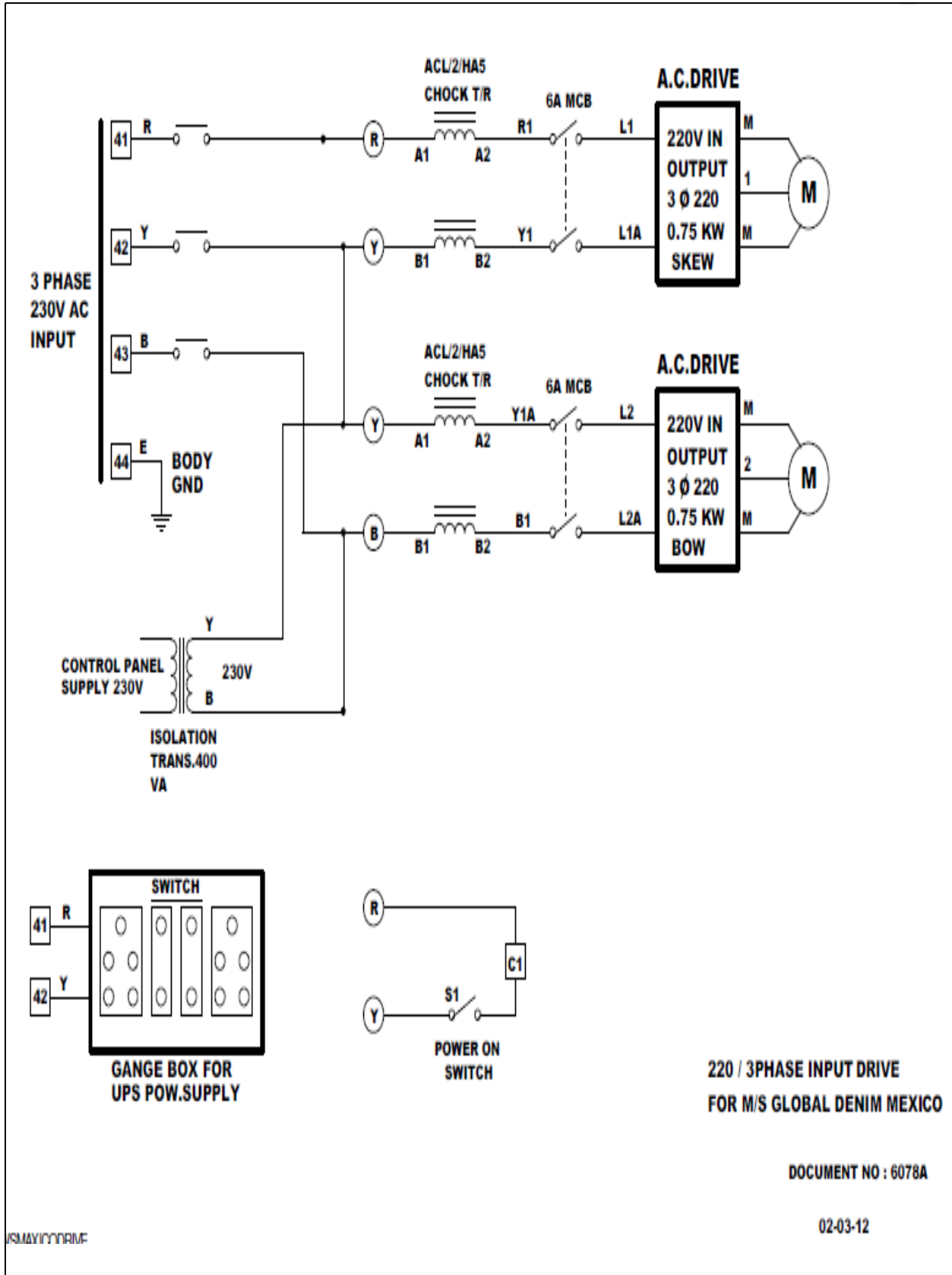
The surrounding temperature should be accessible from the front to facilitate wiring and connection work. If possible should accommodate on straightener bridge or control panels.













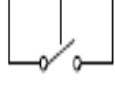
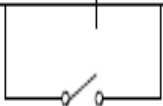
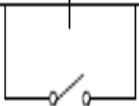
The straightener should be mounted on a sturdy frame clear of the ground.
Kindly avoid at all costs any cross tensioning of straightener while it is being mounted to the pedestal base and make sure that the system is aligned exactly a right angles to the fabric web.

Center of the straightener and center of the stenter and mangle machine must be aligned perfectly and must be parallel and leveled horizontally.

If for some compelling reason the machine must be positional differently. In either case, kindly consult us for further details.

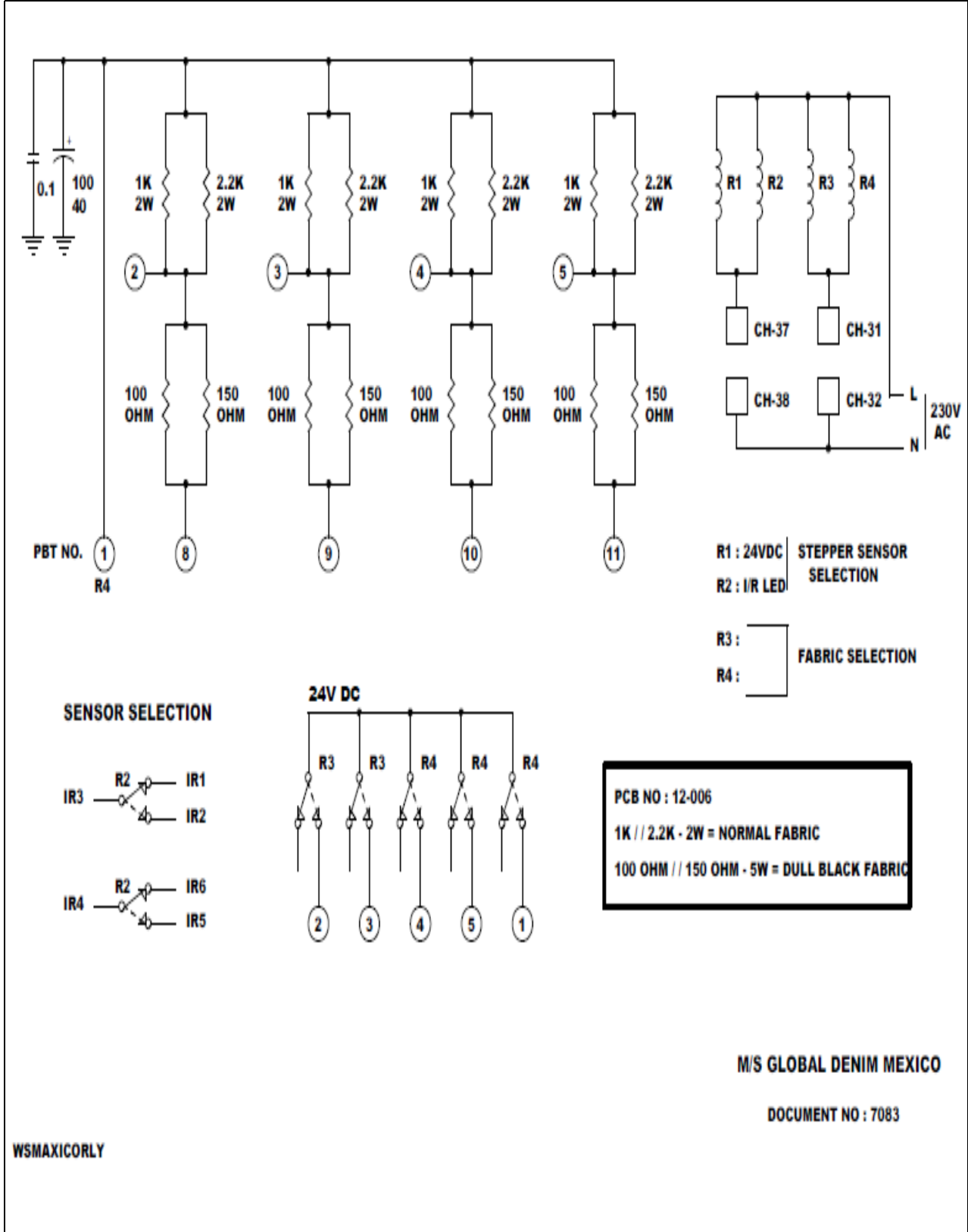




1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
+5V	GND	+24V	GND	—	—	—	—	—	—	—	—	IN FROM SENSOR	OUT TO SENSOR	GND +5V	—	
<hr/>																
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
DIR1	ANG1	DIR2	ANG2	DIR3	ANG3	DIR4	ANG4	DIR5	ANG5	DIR6	ANG6	—	—	FABRIC SEL. SWITCH		—
																
S1		S2		S3		S4		S5		S6						
<hr/>																
34	35	36	37	38	39	40	41	42	43	44	45					
+12	SIG	GND NPN	SENSOR SELECTION ON SWITCH		POWER ON SWITCH		—	R	Y	B	E					
M/C SPEED PROXY								3 PHASE INPUT SUPPLY 220V AC								

CHANNEL CONNECTOR DETAILS OF WEFT STRAIGHTNER FOR M/S GLOBAL DENIM MEXICO

DOCUMENT NO : 7082



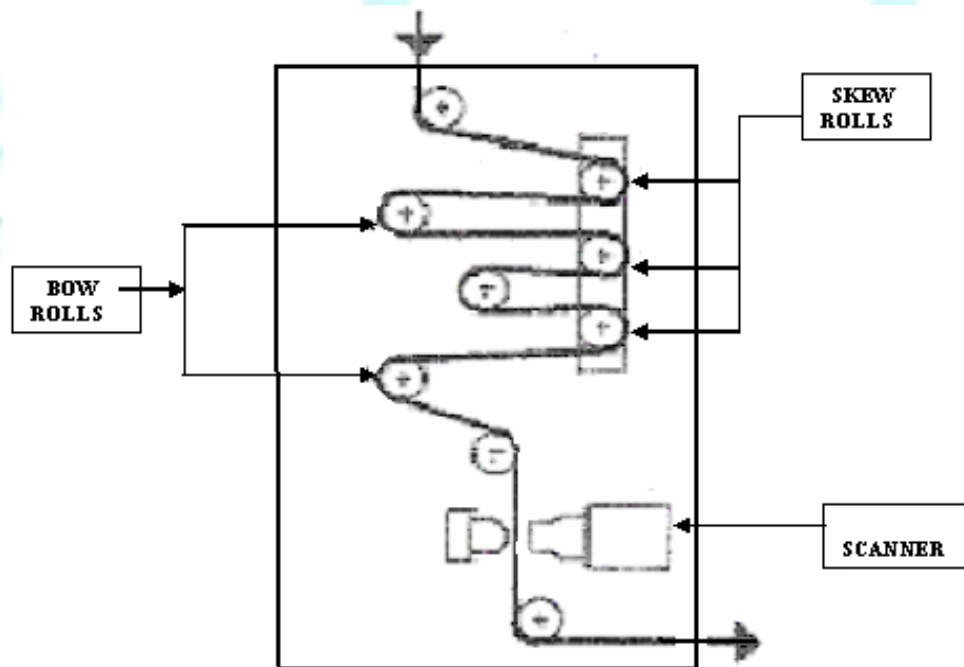
Commissioning

Check and adjustments prior to commissioning:

- Check all the wiring and connections as shown in document no-7082.
- Check the input power supply and ensure that it tallies with that indicated in document no-6078A. Check the phase sequence of incoming 3-phase supply. Switch ON the switch mounted on Manual control (push button) board.
- Check all the scanners visually whether those all are mounted at zero degree or not by matching marking line on scanner to marking line on scanner stand.
- Observe the yellow lamps in case of transmission type light source. After power on, brightness of lamps will be increased step by step. If machine is not running then brightness of lamp will go down after power on. In case of run mode, lamp will glow according to fabric pattern.
- If everything is in order, fed the fabric to the straightener.

Fabric Flow Diagram:

To get perfect correction and to avoid unnecessary tensions to the fabric, fabric should be fed in particular manner .Figure given below shows the way in which fabric must be fed.



To ensure that the straitomat performs to the full extent of its capabilities, the fabric should be fed at centre position of the machine. Therefore web guiders should be installed before the entry of fabric to the straitomat. If the fabric is to be fed other than centre position, the bow rollers would tend to create unwanted skew distortion.

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- Do the scanner selection by switch given on manual control board. For narrow width of fabric, select inner scanners and select outer scanners for wide fabric. Note that whatever scanners not selected to be working, plug out the amphenols of those scanners.
- The position of the weft scanners in relation to the given width of the fabric should be at equal distance across the fabric.
- Check the controls on the associated machine's control panel with auto control switched OFF at manual control board. With running fabric through the machine you should be able to control the bow and skew rollers manually.
- Set different parameters like Skew/Bow Preset, and Skew/Bow Gain according to fabric type by enter its values within range. Set SKEW/BOW preset to generate intentionally SKEW/BOW to eliminate the stenter error. Refer the Setting screen in HMI to set this parameters
- Check some healthy conditions given below.

Healthy Condition

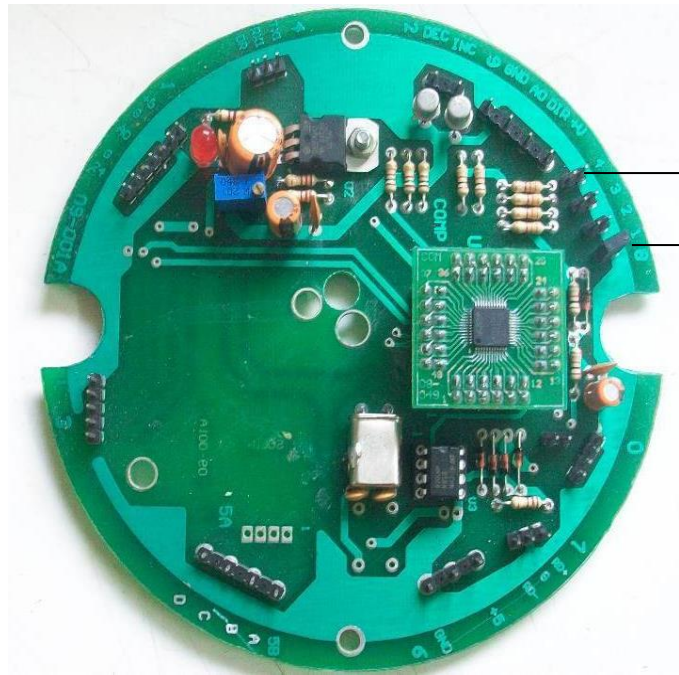
Scanner card (09-001)

CPU card (09-002)

Drive card (04-003)

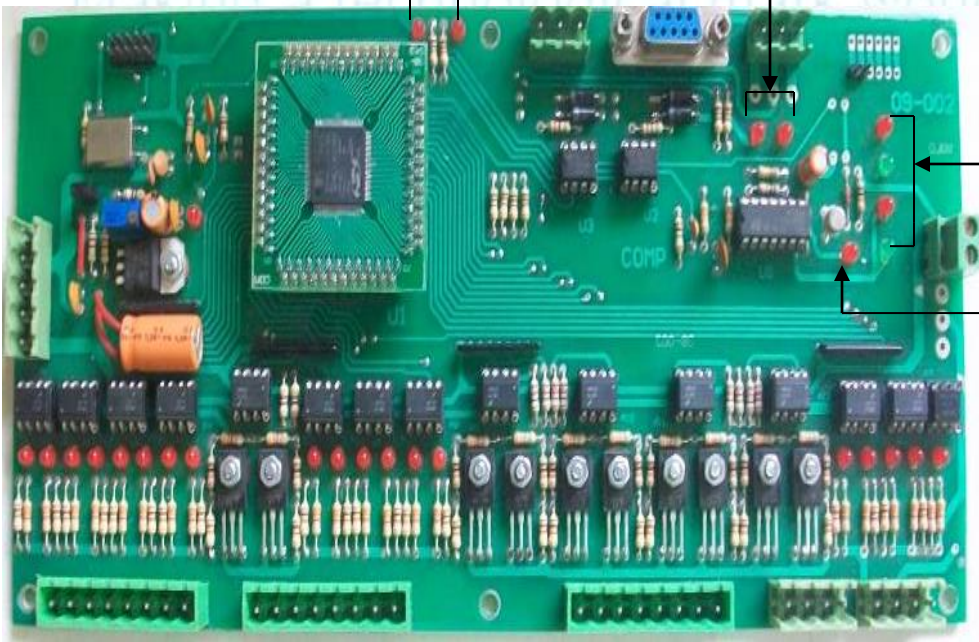
Refer page no 14-15 to see in detail.

- Watchdog led should be off on the CPU card.
 - All scanner fault LEDs should be off on the CPU card.
 - If machine is not running, status of all the scanners should display around zero degree on touchpad HMI display.
-
- Set the system in AUTO control mode to get system control automatically



SCANNER SELECTION

Scanner Card



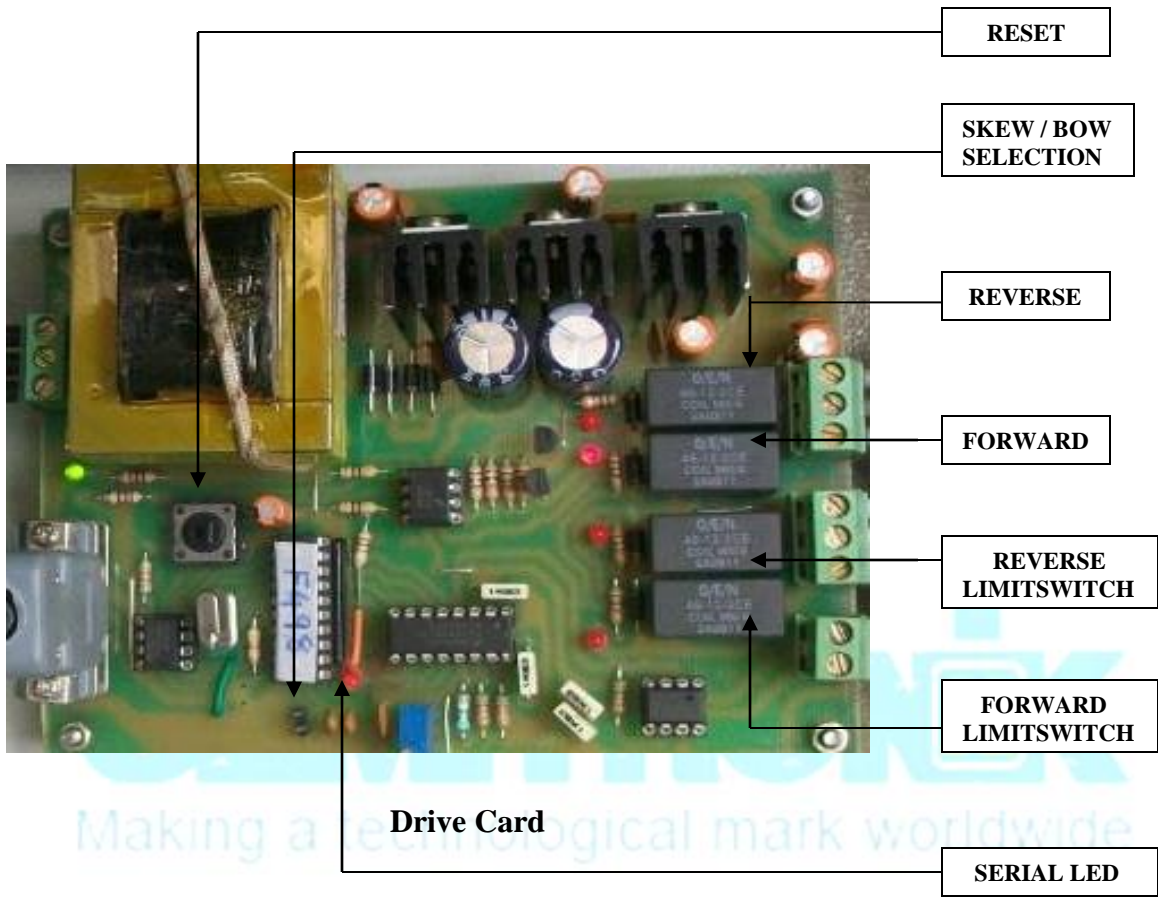
TX1-RX1 LED FOR SCANNER AND DRIVE

TX2-RX2 LED FOR HMI DISPLAY

SCANNERS FAULT LEDS

WATCHDOG LED

CPU Card



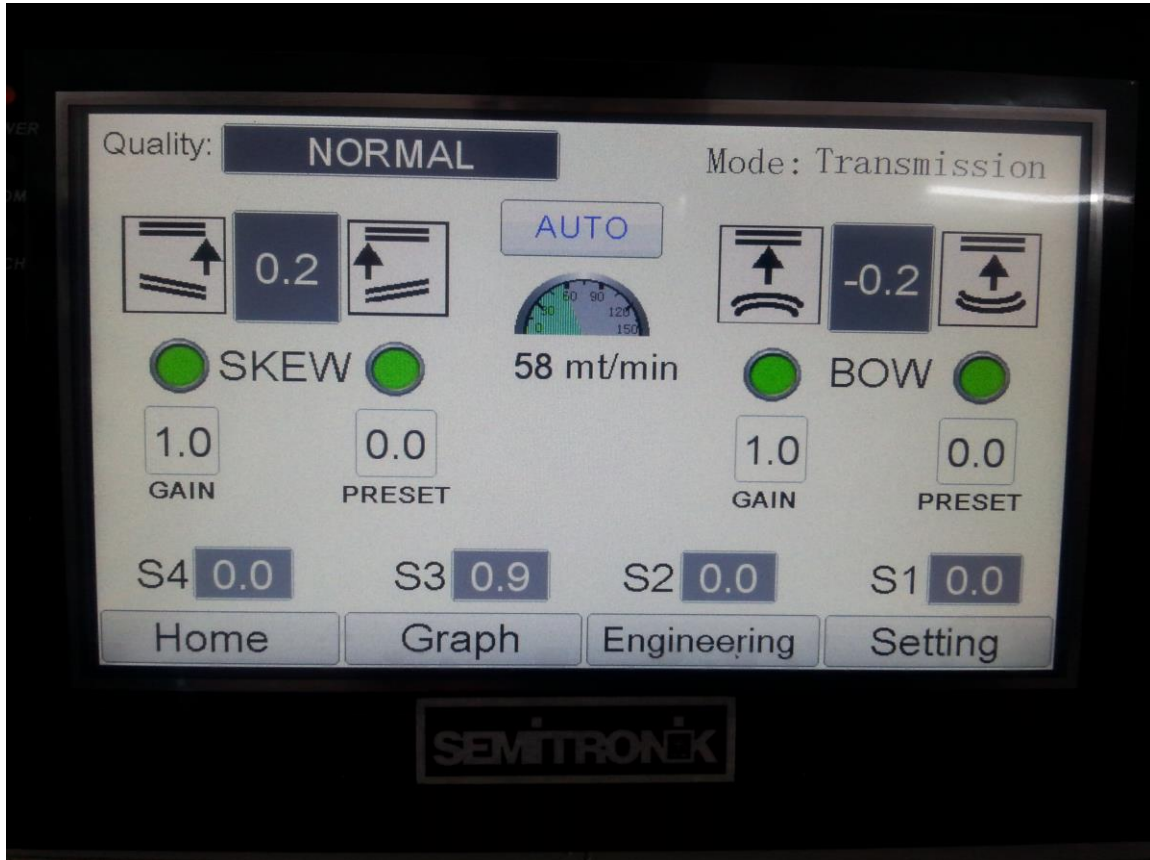
Manual Control Board



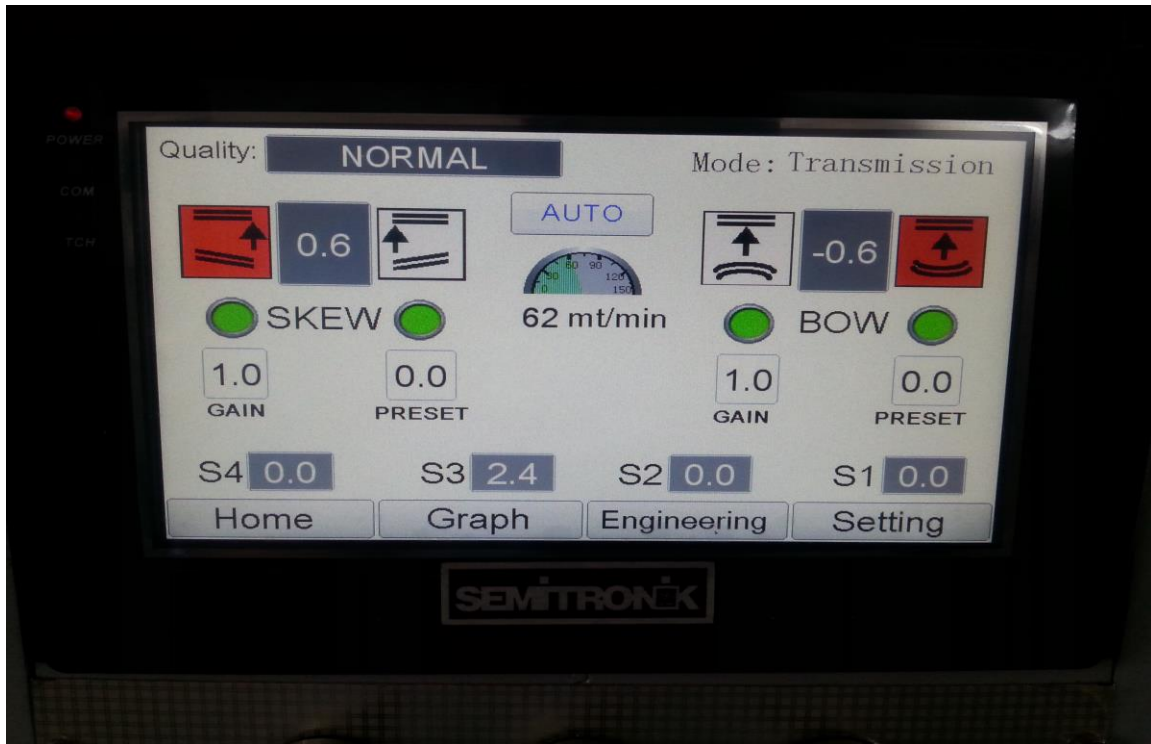
- (A) Switches on the system.
- (B) Sets the system in Auto/Manual mode.
- (C) Select the working scanners as per running fabric width. For narrow width of fabric, select inner scanners and select outer scanners for wide fabric.
- (D, E) Operate manually skew rollers in forward and reverse direction respectively.
- (F, G) Operate manually bow rollers in forward and reverse direction respectively.

HMI Display:

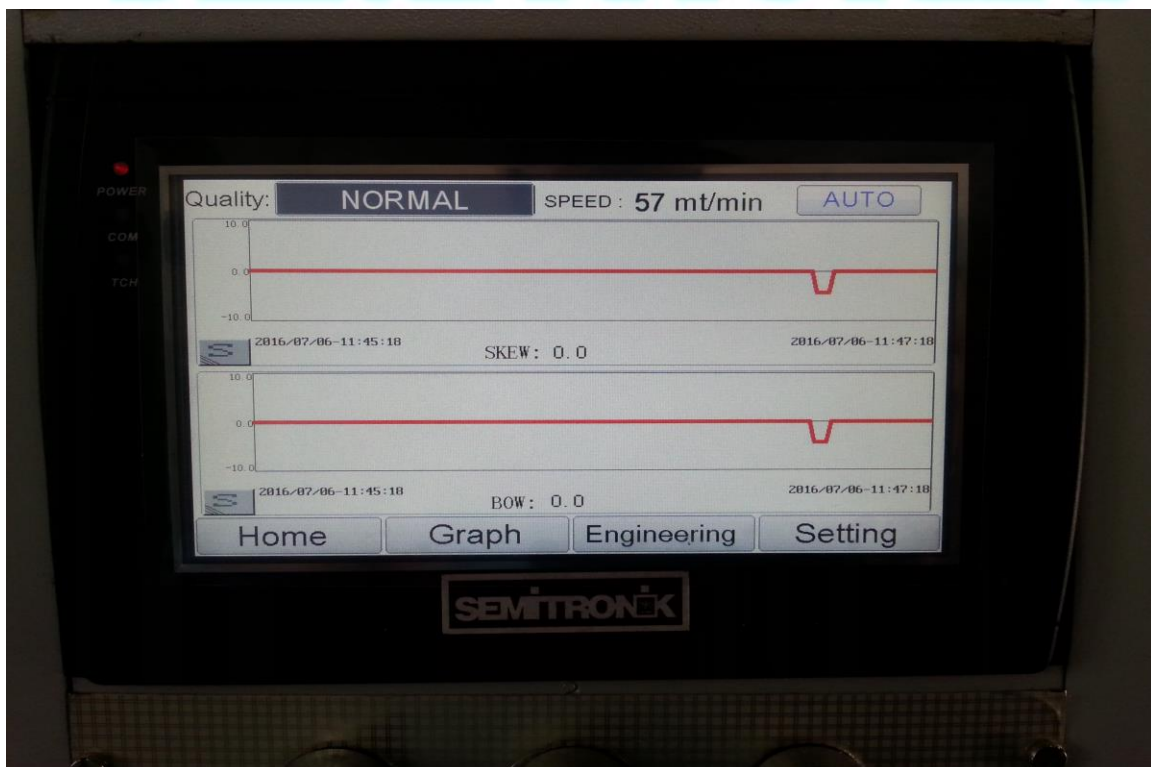
- When power supply is given to HMI, it will display the following Home screen which indicates Quality Name, SKEW, BOW, SKEW Forward/Reverse Limit Switch indication, BOW Forward/Reverse Limit Switch indication, SKEW GAIN, BOW GAIN, SKEW PRESET, BOW PRESET, SPEED, MACHINE MODE (AUTO/MANUAL) and current value of four Scanners.



- When push button will press for skew/bow in forward/reverse direction in manual mode, respective function will operate and indicate also on HMI display with red background.
- Whenever skew and bow will out of dead band in auto mode, control action is take place to minimize the error. Whenever control action for skew/bow in forward/reverse direction will take place, respective background will change with red color as shown below.
- You can change the quality parameter by click on its value for individual parameter and enter require value.

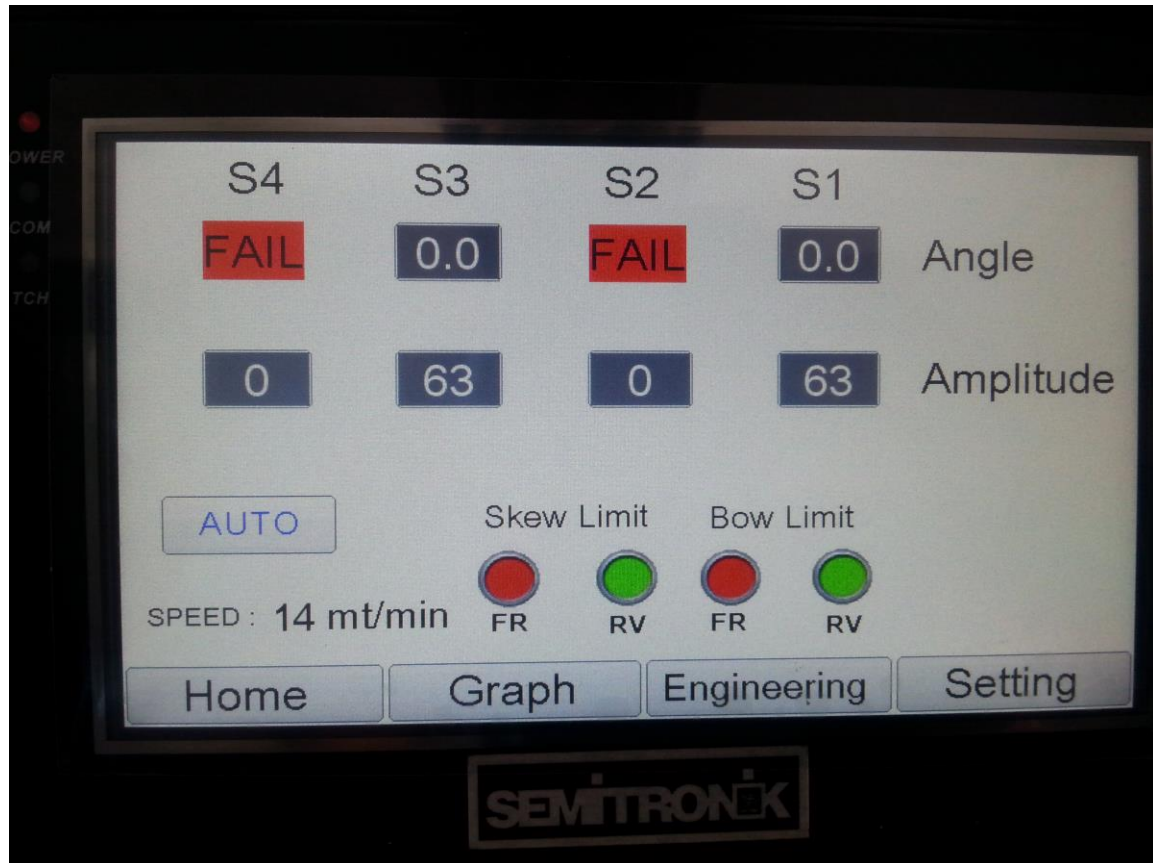


- By click on Graph button, following screen will be display which indicate graphical representation of SKEW and BOW value. It shows graph for last two minute.

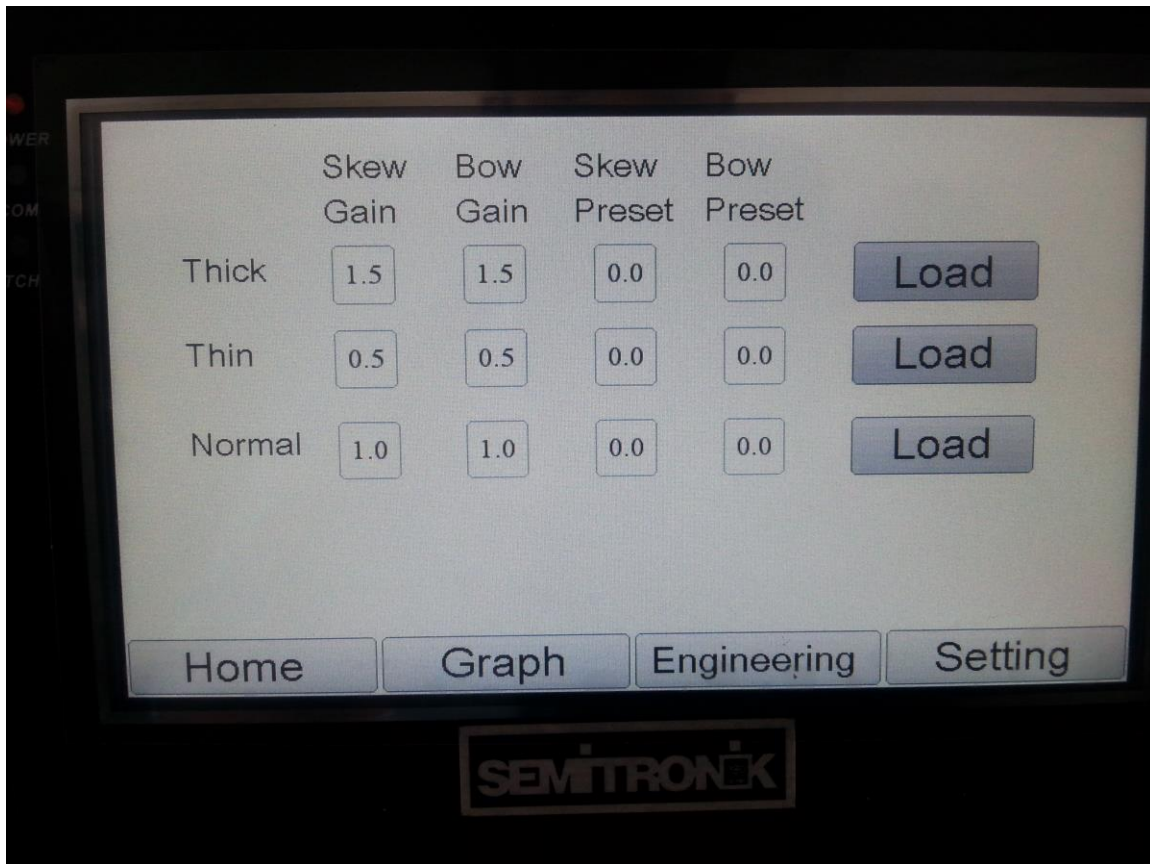


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- By click on Engineering button, following screen will be display which indicate the Angle and Amplitude of all Scanners. If any limit switch whether it is forward or reverse is sense for SKEW or BOW, it will indicate with red button otherwise it will remain green.
- If communication of any scanner is break, HMI will display FAIL message with red background for particular scanner.



- By click on Quality Name in any screen or Setting button, following screen will be display which indicates the recipe.
- To select particular quality, just click on Load for respective quality.
- You can change quality parameter by click its value end then enter require value.
- When you Load any quality, it automatically goes to Home screen.



Note: The range of gain is 0.1 to 2.0 . As a thumb rule, if the correction speed is found to be slow, the gain value should be increased whereas if the system seems to be over-correcting then the gain value should be decreased.

Note: The range of preset is -5.0 to +5.0. Normally, Skew/Bow Preset values should be set as zero. In case of some mechanical or stenter errors, these values will be set for compensate for these errors.

Note: change in any value is permanently saved in HMI.

Note: During running mode, if power supply of entire machine is gone off and on, it will start the last quality according to its setting parameter.

Troubleshooting:

Scanner card (09-001)

CPU card (09-002)

Drive card (04-003)

Refer page no 14-15 to see in detail.

- **When all the scanners are shown off at a time :**

Check the TX1- RX1 LEDs on the CPU card.

If TX led is glowing on CPU card then check serial connection between CPU card and all the scanners. For that plug out all the scanner amphenols and plug in them one by one and check status of scanners on LCD to confirm the scanner which may be responsible to disturb the whole serial link. If such any scanner is detected then check the short link in the Scanner card which defines the scanner no.

- **When straitening rollers do not give any movement :**

Check the watchdog led on CPU card. If it is blinking then the microcontroller is not working .If the watchdog led is off check the serial led given at DRIVE card. It should be blinking to give movement to the straitening rollers .Also check the status display on AC variable drive. If it shows 'F0' then it indicates fault condition. To remove it switch off the power of whole system, wait for 30 seconds and give power to the system.

- **When HMI shows error :**

When HMI shows COM 2 Station 1: Communication Error 3, check the TX2- RX2 led on CPU card. If it is not blinking, check the connection between HMI display and CPU card.

Maintenance

- Switch cabinet, operating sections and indicating sections do not require direct maintenance. In order to achieve a secure and continuous functioning, it is necessary to maintain the sensing bridge and some of its related components from time to time.
- The service is mainly restricted to the cleaning of all mechanically moving parts as well as glass of projectors and follow- up detectors.
- The tension of the driving chain must be checked during the first period of operation, up to about 500 working hours.
The glass plates of the projectors and detectors must always be clean and clear.

